SEQUENCE LISTING

<110>   The Australian National University

5 <120>   METHOD OF PRODUCING PLANTS HAVING ENHANCED TRANSPIRATION EFFICIENCY AND
         PLANTS PRODUCED THEREFROM

   <130>   94948/MRO

10 <150>   AU PS3339
   <151>   2002-07-02

   <160>   45

15 <170>   PatentIn version 3.1

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Thr Ser Pro Ser Ser Asp Tyr Cys Val Trp Arg Gly Val Ser Cys Glu
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Asn Val Thr Phe Asn Val Val Ala Leu Asn Leu Ser Asp Leu Asn Leu
65                  70                  75                  80

Asp Gly Glu Ile Ser Pro Ala Ile Gly Asp Leu Lys Ser Leu Leu Ser
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Ile Asp Leu Arg Gly Asn Arg Leu Ser Gly Gln Ile Pro Asp Glu Ile
            100                 105                 110

Gly Asp Cys Ser Ser Leu Gln Asn Leu Asp Leu Ser Phe Asn Glu Leu
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    Ser Gly Glu Ile Pro Arg Leu Ile Tyr Trp Asn Glu Val Leu Gln Tyr
10              180             185                 190


    Leu Gly Leu Arg Gly Asn Asn Leu Val Gly Asn Ile Ser Pro Asp Leu
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15


    Cys Gln Leu Thr Gly Leu Trp Tyr Phe Asp Val Arg Asn Asn Ser Leu
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20
    Thr Gly Ser Ile Pro Glu Thr Ile Gly Asn Cys Thr Ala Phe Gln Val
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25  Leu Asp Leu Ser Tyr Asn Gln Leu Thr Gly Glu Ile Pro Phe Asp Ile
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    Gly Phe Leu Gln Val Ala Thr Leu Ser Leu Gln Gly Asn Gln Leu Ser
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    Gly Lys Ile Pro Ser Val Ile Gly Leu Met Gln Ala Leu Ala Val Leu
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35


    Asp Leu Ser Gly Asn Leu Leu Ser Gly Ser Ile Pro Pro Ile Leu Gly
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    Asn Leu Thr Phe Thr Glu Lys Leu Tyr Leu His Ser Asn Lys Leu Thr
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Lys Leu Glu Ser Met Thr Tyr Leu Asn Leu Ser Ser Asn Asn Ile Lys
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Gly Pro Ile Pro Val Glu Leu Ser Arg Ile Gly Asn Leu Asp Thr Leu
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Asp Leu Glu His Leu Leu Lys Met Asn Leu Ser Arg Asn His Ile Thr
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Gly Val Val Pro Gly Asp Phe Gly Asn Leu Arg Ser Ile Met Glu Ile
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30
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     Ile Met Arg Met Thr Glu Asn Leu Ser Glu Lys Tyr Ile Ile Gly His
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     Gly Ala Ser Ser Thr Val Tyr Lys Cys Val Leu Lys Asn Cys Lys Pro
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15 Tyr Asp Tyr Leu Glu Asn Gly Ser Leu Trp Asp Leu Leu His Gly Pro
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20 Thr Lys Lys Lys Thr Leu Asp Trp Asp Thr Arg Leu Lys Ile Ala Tyr
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    Ile Ile His Arg Asp Val Lys Ser Ser Asn Ile Leu Leu Asp Lys Asp
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        Lys Asp Leu Gly Val Val Lys Lys Val Phe Gln Leu Ala Leu Leu Cys
                    885             890             895
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   20
        Val Leu Gly Ser Phe Met Leu Ser Glu Gln Pro Pro Ala Ala Thr Asp
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   25   Thr Ser Ala Thr Leu Ala Gly Ser Cys Tyr Val Asp Glu Tyr Ala Asn
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Trp Arg Gly Val Thr Cys Asp Asn Ala Ser Phe Ala Val Leu Ala Leu
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Asn Leu Ser Asn Leu Asn Leu Gly Gly Glu Ile Ser Pro Ala Ile Gly
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Glu Leu Lys Asn Leu Gln Phe Val Asp Leu Lys Gly Asn Lys Leu Thr
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            115   120   125

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Lys Leu Lys Gln Leu Glu Glu Leu Ile Leu Lys Asn Asn Gln Leu Thr
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   Leu Ser Lys Asn His Leu Asp Gly Pro Val Pro Ala Glu Phe Gly Asn
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   Leu Arg Ser Val Gln Val Ile Asp Met Ser Asn Asn Asn Leu Ser Gly
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785   790   795   800

Ser Asn Ile Leu Leu Asp Glu Asn Phe Glu Ala His Leu Ser Asp Phe
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Val Leu Gly Thr Ile Gly Tyr Ile Asp Pro Glu Tyr Ala Arg Thr Ser
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945   950   955   960

Ser Thr Thr Thr Ala Ala Asp Met Arg Gly His Asp Val Thr Asp Ile
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     acacttcatt acctagaact gaacgataat caacttactg ggtcaattcc accagagctt      960

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 15  aatgggacca ttcctcgttc gttgcggaaa cttgaaagca tgacctattt aaatctgtca     1140

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 20  catctattga gacttaactt gagcaagaat ggtctagttg gattcatccc cgcggagttt     1320

     ggtaatttga ggagtgtcat ggagattgat ttatcctata atcaccttgg tggcctgatt     1380

 25  cctcaagaac ttgaaatgct gcaaaacctg atgttgctaa atgtgtcgta caataatttg     1440

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 35  gtaagcaagc cagtgagaaa tgctcccccc aagctggtga tccttcatat gaacatggcc     1740

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 40  ataaaaaagc tgtatgccca ctacccacag agccttaagg aatttgaaac tgagcttgag     1920

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gagtag    2766
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1               5                   10                  15

Val Ala Val Ala Asp Asp Gly Ala Thr Leu Val Glu Ile Lys Lys Ser
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Phe Arg Asn Val Gly Asn Val Leu Tyr Asp Trp Ala Gly Asp Asp Tyr
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Cys Ser Trp Arg Gly Val Leu Cys Asp Asn Val Thr Phe Ala Val Ala
     50   55   60

10

Ala Leu Asn Leu Ser Gly Leu Asn Leu Glu Gly Glu Ile Ser Pro Ala
     65   70   75   80

15 Val Gly Ser Leu Lys Ser Leu Val Ser Ile Asp Leu Lys Ser Asn Gly
             85   90   95

Leu Ser Gly Gln Ile Pro Asp Glu Ile Gly Asp Cys Ser Ser Leu Arg
20   100   105   110

Thr Leu Asp Phe Ser Phe Asn Asn Leu Asp Gly Asp Ile Pro Phe Ser
        115   120   125

25

Ile Ser Lys Leu Lys His Leu Glu Asn Leu Ile Leu Lys Asn Asn Gln
       130   135   140

30

Leu Ile Gly Ala Ile Pro Ser Thr Leu Ser Gln Leu Pro Asn Leu Lys
   145   150   155   160

35 Ile Leu Asp Leu Ala Gln Asn Lys Leu Thr Gly Glu Ile Pro Arg Leu
             165   170   175

Ile Tyr Trp Asn Glu Val Leu Gln Tyr Leu Asp Val Lys Asn Asn Ser
40   180   185   190

Leu Thr Gly Val Ile Pro Asp Thr Ile Gly Asn Cys Thr Ser Phe Gln

195   200   205

5   Val Leu Asp Leu Ser Tyr Asn Arg Phe Thr Gly Pro Ile Pro Phe Asn
       210   215   220

     Ile Gly Phe Leu Gln Val Ala Thr Leu Ser Leu Gln Gly Asn Lys Phe
     225   230   235   240
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     Thr Gly Pro Ile Pro Ser Val Ile Gly Leu Met Gln Ala Leu Ala Val
              245   250   255

15
     Leu Asp Leu Ser Tyr Asn Gln Leu Ser Gly Pro Ile Pro Ser Ile Leu
          260   265   270

20   Gly Asn Leu Thr Tyr Thr Glu Lys Leu Tyr Ile Gln Gly Asn Lys Leu
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     Thr Gly Ser Ile Pro Pro Glu Leu Gly Asn Met Ser Thr Leu His Tyr
25   290   295   300

     Leu Glu Leu Asn Asp Asn Gln Leu Thr Gly Ser Ile Pro Pro Glu Leu
     305   310   315   320
30

     Gly Arg Leu Thr Gly Leu Phe Asp Leu Asn Leu Ala Asn Asn His Leu
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     Glu Gly Pro Ile Pro Asp Asn Leu Ser Ser Cys Val Asn Leu Asn Ser
          340   345   350

40   Phe Asn Ala Tyr Gly Asn Lys Leu Asn Gly Thr Ile Pro Arg Ser Leu
          355   360   365

Arg Lys Leu Glu Ser Met Thr Tyr Leu Asn Leu Ser Ser Asn Phe Ile
    370   375   380

5   Ser Gly Ser Ile Pro Ile Glu Leu Ser Arg Ile Asn Asn Leu Asp Thr
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    Leu Asp Leu Ser Cys Asn Met Met Thr Gly Pro Ile Pro Ser Ser Ile
10   405   410   415

    Gly Ser Leu Glu His Leu Leu Arg Leu Asn Leu Ser Lys Asn Gly Leu
              420   425   430
15

    Val Gly Phe Ile Pro Ala Glu Phe Gly Asn Leu Arg Ser Val Met Glu
            435   440   445

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    Ile Asp Leu Ser Tyr Asn His Leu Gly Gly Leu Ile Pro Gln Glu Leu
          450   455   460

25 Glu Met Leu Gln Asn Leu Met Leu Leu Asn Val Ser Tyr Asn Asn Leu
    465   470   475   480

    Ala Gly Val Val Pro Ala Asp Asn Asn Phe Thr Arg Phe Ser Pro Asp
30   485   490   495

    Ser Phe Leu Gly Asn Pro Gly Leu Cys Gly Tyr Trp Leu Gly Ser Ser
              500   505   510
35

    Cys Arg Ser Thr Gly His His Glu Lys Pro Pro Ile Ser Lys Ala Ala
            515   520   525

40
    Ile Ile Gly Val Ala Val Gly Gly Leu Val Ile Leu Leu Met Ile Leu
          530   535   540

Val Ala Val Cys Arg Pro His Arg Pro Pro Ala Phe Lys Asp Val Thr
545   550   555   560

5

Val Ser Lys Pro Val Arg Asn Ala Pro Pro Lys Leu Val Ile Leu His
                565   570   575

10 Met Asn Met Ala Leu His Val Tyr Asp Asp Ile Met Arg Met Thr Glu
                580   585   590

Asn Leu Ser Glu Lys Tyr Ile Ile Gly Tyr Gly Ala Ser Ser Thr Val
15   595   600   605

Tyr Lys Cys Val Leu Lys Asn Cys Lys Pro Val Ala Ile Lys Lys Leu
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20

Tyr Ala His Tyr Pro Gln Ser Leu Lys Glu Phe Glu Thr Glu Leu Glu
625   630   635   640

25

Thr Val Gly Ser Ile Lys His Arg Asn Leu Val Ser Leu Gln Gly Tyr
                645   650   655

30 Ser Leu Ser Pro Val Gly Asn Leu Leu Phe Tyr Asp Tyr Met Glu Cys
                660   665   670

Gly Ser Leu Trp Asp Val Leu His Glu Gly Ser Ser Lys Lys Lys Lys
35   675   680   685

Leu Asp Trp Glu Thr Arg Leu Arg Ile Ala Leu Gly Ala Ala Gln Gly
        690   695   700

40

Leu Ala Tyr Leu His His Asp Cys Ser Pro Arg Ile Ile His Arg Asp
705   710   715   720

Val Lys Ser Lys Asn Ile Leu Leu Asp Lys Asp Tyr Glu Ala His Leu
          725   730   735

Thr Asp Phe Gly Ile Ala Lys Ser Leu Cys Val Ser Lys Thr His Thr
         740   745   750

Ser Thr Tyr Val Met Gly Thr Ile Gly Tyr Ile Asp Pro Glu Tyr Ala
        755   760   765

Arg Thr Ser Arg Leu Asn Glu Lys Ser Asp Val Tyr Arg Leu Trp His
      770   775   780

Cys Ser Ala Gly Ala Ala Asp Trp Gln Glu Ala Ser Gly Gln Arg Ile
785   790   795   800

Leu Ser Lys Thr Ala Ser Asn Glu Val Met Asp Thr Val Asp Pro Asp
        805   810   815

Ile Gly Asp Thr Cys Lys Asp Leu Gly Glu Val Lys Lys Leu Phe Gln
        820   825   830

Leu Ala Leu Leu Cys Thr Lys Arg Gln Pro Ser Asp Arg Pro Thr Met
        835   840   845

His Glu Val Val Arg Val Leu Asp Cys Leu Val Asn Pro Asp Pro Pro
      850   855   860

Pro Lys Pro Ser Ala His Gln Leu Pro Gln Pro Ser Pro Ala Val Pro
865   870   875   880

Ser Tyr Ile Asn Glu Tyr Val Ser Leu Arg Gly Thr Gly Ala Leu Ser

885   890   895

Cys Ala Asn Ser Thr Ser Thr Ser Asp Ala Glu Leu Phe Leu Lys Phe

5   900   905   910

Gly Glu Ala Ile Ser Gln Asn Met Glu

      915   920

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gagattggaa actgtgtttc tcttgcttat gtggatttct ccaccaattt gttgtttgga     300

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cagattaccg gagttatacc ctacaatatt ggttcctcc aagtagctac tctgtcactt      660

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Cys Asp Asn Val Ser Leu Asn Val Val Ser Leu Asn Leu Ser Asn Leu
            35                  40                  45
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        Asn Leu Gly Gly Glu Ile Ser Ser Ala Leu Gly Asp Leu Met Asn Leu
            50                  55                  60


  5    Gln Ser Ile Asp Leu Gln Gly Asn Lys Leu Gly Gly Gln Ile Pro Asp
            65                  70                  75                  80


       Glu Ile Gly Asn Cys Val Ser Leu Ala Tyr Val Asp Phe Ser Thr Asn
  10                   85                  90                  95


       Leu Leu Phe Gly Asp Ile Pro Phe Ser Ile Ser Lys Leu Lys Gln Leu
                       100                 105                 110
  15


       Glu Phe Leu Asn Leu Lys Asn Asn Gln Leu Thr Gly Pro Ile Pro Ala
                   115                 120                 125


  20
       Thr Leu Thr Gln Ile Pro Asn Leu Lys Thr Leu Asp Leu Ala Arg Asn
               130                 135                 140


  25   Gln Leu Thr Gly Glu Ile Pro Arg Leu Leu Tyr Trp Asn Glu Val Leu
       145                 150                 155                 160


       Gln Tyr Leu Gly Leu Arg Gly Asn Met Leu Thr Gly Thr Leu Ser Pro
  30                   165                 170                 175


       Asp Met Cys Gln Leu Thr Gly Leu Trp Tyr Phe Asp Val Arg Gly Asn
                   180                 185                 190
  35


       Asn Leu Thr Gly Thr Ile Pro Glu Ser Ile Gly Asn Cys Thr Ser Phe
                   195                 200                 205


  40
       Glu Ile Leu Asp Val Ser Tyr Asn Gln Ile Thr Gly Val Ile Pro Tyr
               210                 215                 220
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Asn Ile Gly Phe Leu Gln Val Ala Thr Leu Ser Leu Gln Gly Asn Lys
225   230   235   240

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Leu Thr Gly Arg Ile Pro Glu Val Ile Gly Leu Met Gln Ala Leu Ala
                245   250   255

10 Val Leu Asp Leu Ser Asp Asn Glu Leu Thr Gly Pro Ile Pro Pro Ile
                260   265   270

Leu Gly Asn Leu Ser Phe Thr Gly Lys Leu Tyr Leu His Gly Asn Lys
15   275   280   285

Leu Thr Gly Gln Ile Pro Pro Glu Leu Gly Asn Met Ser Arg Leu Ser
        290   295   300
20

Tyr Leu Gln Leu Asn Asp Asn Glu Leu Val Gly Lys Ile Pro Pro Glu
305   310   315   320

25

Leu Gly Lys Leu Glu Gln Leu Phe Glu Leu Asn Leu Ala Asn Asn Asn
                325   330   335

30 Leu Val Gly Leu Ile Pro Ser Asn Ile Ser Ser Cys Ala Ala Leu Asn
                340   345   350

Gln Phe Asn Val His Gly Asn Phe Leu Ser Gly Ala Val Pro Leu Glu
35   355   360   365

Phe Arg Asn Leu Gly Ser Leu Thr Tyr Leu Asn Leu Ser Ser Asn Ser
        370   375   380
40

Phe Lys Gly Lys Ile Pro Ala Glu Leu Gly His Ile Ile Asn Leu Asp
385   390   395   400

Thr Leu Asp Leu Ser Gly Asn Asn Phe Ser Gly Ser Ile Pro Leu Thr
            405   410   415

Leu Gly Asp Leu Glu His Leu Leu Ile Leu Asn Leu Ser Arg Asn His
            420   425   430

Leu Asn Gly Thr Leu Pro Ala Glu Phe Gly Asn Leu Arg Ser Ile Gln
            435   440   445

Ile Ile Asp Val Ser Phe Asn Phe Leu Ala Gly Val Ile Pro Thr Glu
        450   455   460

Leu Gly Gln Leu Gln Asn Ile Asn Ser Leu Ile Leu Asn Asn Asn Lys
465   470   475   480

Ile His Gly Lys Ile Pro Asp Gln Leu Thr Asn Cys Phe Ser Leu Ala
            485   490   495

Asn Leu Asn Ile Ser Phe Asn Asn Leu Ser Gly Ile Ile Pro Pro Met
            500   505   510

Lys Asn Phe Thr Arg Phe Ser Pro Ala Ser Phe Phe Gly Asn Pro Phe
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Leu Cys Gly Asn Trp Val Gly Ser Ile Cys Gly Pro Ser Leu Pro Lys
        530   535   540

Ser Gln Val Phe Thr Arg Val Ala Val Ile Cys Met Val Leu Gly Phe
        545   550   555   560

Ile Thr Leu Ile Cys Met Ile Phe Ile Ala Val Tyr Lys Ser Lys Gln

565   570   575

5 Gln Lys Pro Val Leu Lys Gly Ser Ser Lys Gln Pro Glu Gly Ser Thr
       580   585   590

  Lys Leu Val Ile Leu His Met Asp Met Ala Ile His Thr Phe Asp Asp
     595   600   605
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  Ile Met Arg Val Thr Glu Asn Leu Asp Glu Lys Tyr Ile Ile Gly Tyr
    610   615   620

15
  Gly Ala Ser Ser Thr Val Tyr Lys Cys Thr Ser Lys Thr Ser Arg Pro
  625   630   635   640

20 Ile Ala Ile Lys Arg Ile Tyr Asn Gln Tyr Pro Ser Asn Phe Arg Glu
       645   650   655

  Phe Glu Thr Glu Leu Glu Thr Ile Gly Ser Ile Arg His Arg Asn Ile
25   660   665   670

  Val Ser Leu His Gly Tyr Ala Leu Ser Pro Phe Gly Asn Leu Leu Phe
     675   680   685
30

  Tyr Asp Tyr Met Glu Asn Gly Ser Leu Trp Asp Leu Leu His Gly Pro
    690   695   700

35
  Gly Lys Lys Val Lys Leu Asp Trp Glu Thr Arg Leu Lys Ile Ala Val
  705   710   715   720

40 Gly Ala Ala Gln Gly Leu Ala Tyr Leu His His Asp Cys Thr Pro Arg
       725   730   735

33

Ile Ile His Arg Asp Ile Lys Ser Ser Asn Ile Leu Leu Asp Gly Asn
        740   745   750

5 Phe Glu Ala Arg Leu Ser Asp Phe Gly Ile Ala Lys Ser Ile Pro Ala
            755   760   765

   Thr Lys Thr Tyr Ala Ser Thr Tyr Val Leu Gly Thr Ile Gly Tyr Ile
10   770   775   780

   Asp Pro Glu Tyr Ala Arg Thr Ser Arg Leu Asn Glu Lys Ser Asp Ile
   785   790   795   800
15

   Tyr Ser Phe Gly Ile Val Leu Leu Glu Leu Leu Thr Gly Lys Lys Ala
                805   810   815

20
   Val Asp Asn Glu Ala Asn Leu His Gln Met Ile Leu Ser Lys Ala Asp
            820   825   830

25 Asp Asn Thr Val Met Glu Ala Val Asp Ala Glu Val Ser Val Thr Cys
            835   840   845

   Met Asp Ser Gly His Ile Lys Lys Thr Phe Gln Leu Ala Leu Leu Cys
30   850   855   860

   Thr Lys Arg Asn Pro Leu Glu Arg Pro Thr Met Gln Glu Val Ser Arg
   865   870   875   880
35

   Val Leu Leu Ser Leu Val Pro Ser Pro Pro Pro Lys Lys Leu Pro Ser
                885   890   895

40
   Pro Ala Lys Val Gln Glu Gly Glu Glu Arg Arg Glu Ser His Ser Ser
            900   905   910

Asp Thr Thr Thr Pro Gln Trp Phe Val Gln Phe Arg Glu Asp Ile Ser
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Lys Ser Ser Leu
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20 agcaacttag tgaatatgct tttggattgg gacgatgttc acaacagtga cttgtgttct   180

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    cttgtttatc tggatttgtc cgagaatctg ttatatggag acataccttt ctcaatctct   420

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    gcaaccttaa cccagattcc aaaccttaag agacttgatc ttgctggcaa tcatctaacg   540

    ggtgagatat cgagattgct ttactggaat gaagtttgc agtatcttgg attacgaggg   600

35 aatatgttga ctggaacgtt atcttctgat atgtgtcagc taaccggttt gtggtacttt   660

    gatgtgagag gaaataatct aactggaacc atcccggaga gcatcggaaa ttgcacaagc   720

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    ttcctccaag ttgctactct ctcacttcaa ggaaacagat tgacgcgtag aattccagaa   840

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      gttattggtc taatgcaggc tcttgctgtt ttggatttga gtgacaatga gcttgttggt    900

      cctatcccac cgatacttgg caatctctca tttaccggaa agttgtatct ccatggcaat    960

   5  atgctcactg gtccaatccc ctctgagctt gggaatatgt cacgtctcag ctatttgcag   1020

      ctaaacgaca ataaactagt gggaactatt ccacctcagc ttggaaagct ggagcaattg   1080

      tttgaactga atcttgccaa caaccgttta gtagggccca taccatccaa cattagttca   1140
  10
      tgtgcagcct tgaatcaatt caatgttcat gggaacctct tgagtggatc tattccactg   1200

      gcgtttcgca atctcgggag cttgacttat ctgaatcttt cgtcgaacaa tttcaaggga   1260

  15  aaaataccag ttgagcttgg acatataatc aatcttgaca aactagatct gtctggcaat   1320

      aacttctcag ggtctatacc attaacgctt ggcgatcttg aacaccttct catattaaat   1380

      cttagcagaa accatcttag tggacaatta cctgcagagt ttgggaacct tcgaagcatt   1440
  20
      cagatgattg atgtatcatt caatctgctc tccggagtta ttccaactga acttggccaa   1500

      ttgcagaatt aaactctttt aatattgaac aacaacaagc ttcatgggaa aattccagat   1560

  25  cagcttacga actgcttcac tcttgtcaat ctgaatgtct ccttcaacaa tctctccggg   1620

      atagtcccac caatgaaaaa cttctcacgt tttgctccag ccagctttgt tggaaatcca   1680

      tatctttgtg gaaactgggt tggatctatt tgtggtcctt taccgaaatc tcgagtattc   1740
  30
      tccagaggtg ctttgatctg cattgttctt ggcgtcatca ctctcctatg tatgattttc   1800

      cttgcagttt acaaatcaat gcagcagaag aagattctac aaggctcctc aaaacaagct   1860

  35  gaagggttaa ccaagctagt gattctccac atggacatgg caattcatac atttgatgat   1920

      atcatgagag tgactgagaa tcttaacgaa aagtttataa ttggatatgg tgcttctagc   1980

      acggtataca aatgtgcatt aaaaagttcc cgacctattg ccattaagcg actctacaat   2040
  40
      cagtatccgc ataacttgcg ggaatttgag acagaacttg agaccattgg gagcattagg   2100

      cacagaaaca tagtcagctt gcatggatat gccttgtctc ctactggcaa ccttcttttc   2160
```

```
tatgactaca tggaaaatgg atcactttgg gaccttcttc atgggtcatt gaagaaagtg   2220

aagcttgatt gggagacaag gttgaagata gcggttggag ctgcacaagg actagcctat   2280

cttcaccacg attgtactcc tcgaatcatt caccgtgaca tcaagtcatc gaacatactt   2340

cttgatgaga atttcgaagc acatttatct gatttcggga ttgctaagag cataccagct   2400

agcaaaaccc atgcctcgac ttatgttttg ggaacaattg gttatataga cccagagtat   2460

gctcgtactt cacgaatcaa tgagaaatcc gatatataca gcttcggtat tgttcttctt   2520

gagcttctca ctgggaagaa agcagtggat aacgaagcta acttgcatca actgatattg   2580

tcaaaggctg atgataatac tgtgatggaa gcagttgatc cagaggttac tgtgacttgt   2640

atggacttgg gacatatcag gaagacattt cagctggctc tcttatgcac aaagcgaaac   2700

cctttagaga gacccacaat gcttgaagtc tctagggttc tgctctctct tgtcccatct   2760

ctgcaagtag caaagaagct accttctctt gatcactcaa ccaaaaagct gcagcaagag   2820

aatgaagtta ggaatcctga tgcagaagca tctcaatggt ttgttcagtt ccgtgaagtc   2880

atctccaaaa gtagcatata a                                              2901
```

```
<210>  10
<211>  966
<212>  PRT
<213>  Arabidopsis thaliana ERECTA homolog

<400>  10

Met Lys Glu Lys Met Gln Arg Met Val Leu Ser Leu Ala Met Val Gly
1               5                   10                  15


Phe Met Val Phe Gly Val Ala Ser Ala Met Asn Asn Glu Gly Lys Ala
                20                  25                  30
```

```
       Leu Met Ala Ile Lys Gly Ser Phe Ser Asn Leu Val Asn Met Leu Leu
               35                  40                  45


 5     Asp Trp Asp Asp Val His Asn Ser Asp Leu Cys Ser Trp Arg Gly Val
               50                  55                  60


       Phe Cys Asp Asn Val Ser Tyr Ser Val Val Ser Leu Asn Leu Ser Ser
10     65                  70                  75                  80


       Leu Asn Leu Gly Gly Glu Ile Ser Pro Ala Ile Gly Asp Leu Arg Asn
                       85                  90                  95
15

       Leu Gln Ser Ile Asp Leu Gln Gly Asn Lys Leu Ala Gly Gln Ile Pro
                   100                 105                 110

20
       Asp Glu Ile Gly Asn Cys Ala Ser Leu Val Tyr Leu Asp Leu Ser Glu
                   115                 120                 125


25     Asn Leu Leu Tyr Gly Asp Ile Pro Phe Ser Ile Ser Lys Leu Lys Gln
                   130                 135                 140



       Leu Glu Thr Leu Asn Leu Lys Asn Asn Gln Leu Thr Gly Pro Val Pro
30     145                 150                 155                 160


       Ala Thr Leu Thr Gln Ile Pro Asn Leu Lys Arg Leu Asp Leu Ala Gly
                   165                 170                 175
35

       Asn His Leu Thr Gly Glu Ile Ser Arg Leu Leu Tyr Trp Asn Glu Val
                   180                 185                 190

40
       Leu Gln Tyr Leu Gly Leu Arg Gly Asn Met Leu Thr Gly Thr Leu Ser
                   195                 200                 205
```

Ser Asp Met Cys Gln Leu Thr Gly Leu Trp Tyr Phe Asp Val Arg Gly
    210   215   220

5
Asn Asn Leu Thr Gly Thr Ile Pro Glu Ser Ile Gly Asn Cys Thr Ser
225   230   235   240

10 Phe Gln Ile Leu Asp Ile Ser Tyr Asn Gln Ile Thr Gly Glu Ile Pro
                245   250   255

Tyr Asn Ile Gly Phe Leu Gln Val Ala Thr Leu Ser Leu Gln Gly Asn
15   260   265   270

Arg Leu Thr Gly Arg Ile Pro Glu Val Ile Gly Leu Met Gln Ala Leu   · :·
    275   280   285
20

Ala Val Leu Asp Leu Ser Asp Asn Glu Leu Val Gly Pro Ile Pro Pro
    290   295   300

25
Ile Leu Gly Asn Leu Ser Phe Thr Gly Lys Leu Tyr Leu His Gly Asn   ·,·°
305   310 ·   315   320

30 Met Leu Thr Gly Pro Ile Pro Ser Glu Leu Gly Asn Met Ser Arg Leu
                325   330   335

Ser Tyr Leu Gln Leu Asn Asp Asn Lys Leu Val Gly Thr Ile Pro Pro
35   340   345   350

Glu Leu Gly Lys Leu Glu Gln Leu Phe Glu Leu Asn Leu Ala Asn Asn
        355   360   365
40

Arg Leu Val Gly Pro Ile Pro Ser Asn Ile Ser Ser Cys Ala Ala Leu
    370   375   380

Asn Gln Phe Asn Val His Gly Asn Leu Leu Ser Gly Ser Ile Pro Leu
385   390   395   400

5

Ala Phe Arg Asn Leu Gly Ser Leu Thr Tyr Leu Asn Leu Ser Ser Asn
                405   410   415

10

Asn Phe Lys Gly Lys Ile Pro Val Glu Leu Gly His Ile Ile Asn Leu
            420   425   430

15 Asp Lys Leu Asp Leu Ser Gly Asn Asn Phe Ser Gly Ser Ile Pro Leu
            435   440   445

Thr Leu Gly Asp Leu Glu His Leu Leu Ile Leu Asn Leu Ser Arg Asn
20   450   455   460

His Leu Ser Gly Gln Leu Pro Ala Glu Phe Gly Asn Leu Arg Ser Ile
465   470   475   480

25

Gln Met Ile Asp Val Ser Phe Asn Leu Leu Ser Gly Val Ile Pro Thr
            485   490   495

30

Glu Leu Gly Gln Leu Gln Asn Leu Asn Ser Leu Ile Leu Asn Asn Asn
            500   505   510

35 Lys Leu His Gly Lys Ile Pro Asp Gln Leu Thr Asn Cys Phe Thr Leu
            515   520   525

Val Asn Leu Asn Val Ser Phe Asn Asn Leu Ser Gly Ile Val Pro Pro
40   530   535   540

Met Lys Asn Phe Ser Arg Phe Ala Pro Ala Ser Phe Val Gly Asn Pro

545   550   555   560

Tyr Leu Cys Gly Asn Trp Val Gly Ser Ile Cys Gly Pro Leu Pro Lys

5   565   570   575

Ser Arg Val Phe Ser Arg Gly Ala Leu Ile Cys Ile Val Leu Gly Val

10   580   585   590

Ile Thr Leu Leu Cys Met Ile Phe Leu Ala Val Tyr Lys Ser Met Gln

                   595   600   605

15

Gln Lys Lys Ile Leu Gln Gly Ser Ser Lys Gln Ala Glu Gly Leu Thr

                   610   615   620

20   Lys Leu Val Ile Leu His Met Asp Met Ala Ile His Thr Phe Asp Asp

     625   630   635   640

Ile Met Arg Val Thr Glu Asn Leu Asn Glu Lys Phe Ile Ile Gly Tyr

25   645   650   655

Gly Ala Ser Ser Thr Val Tyr Lys Cys Ala Leu Lys Ser Ser Arg Pro

                   660   665   670

30

Ile Ala Ile Lys Arg Leu Tyr Asn Gln Tyr Pro His Asn Leu Arg Glu

                   675   680   685

35

Phe Glu Thr Glu Leu Glu Thr Ile Gly Ser Ile Arg His Arg Asn Ile

     690   695   700

Val Ser Leu His Gly Tyr Ala Leu Ser Pro Thr Gly Asn Leu Leu Phe

40   705   710   715   720

```
     Tyr Asp Tyr Met Glu Asn Gly Ser Leu Trp Asp Leu Leu His Gly Ser
                 725             730             735


5    Leu Lys Lys Val Lys Leu Asp Trp Glu Thr Arg Leu Lys Ile Ala Val
                 740             745             750


     Gly Ala Ala Gln Gly Leu Ala Tyr Leu His His Asp Cys Thr Pro Arg
10           755             760             765


     Ile Ile His Arg Asp Ile Lys Ser Ser Asn Ile Leu Leu Asp Glu Asn
             770             775             780
15

     Phe Glu Ala His Leu Ser Asp Phe Gly Ile Ala Lys Ser Ile Pro Ala
     785             790             795             800

20
     Ser Lys Thr His Ala Ser Thr Tyr Val Leu Gly Thr Ile Gly Tyr Ile
                 805             810             815


25   Asp Pro Glu Tyr Ala Arg Thr Ser Arg Ile Asn Glu Lys Ser Asp Ile
                 820             825             830


     Tyr Ser Phe Gly Ile Val Leu Leu Glu Leu Leu Thr Gly Lys Lys Ala
30           835             840             845


     Val Asp Asn Glu Ala Asn Leu His Gln Leu Ile Leu Ser Lys Ala Asp
             850             855             860
35

     Asp Asn Thr Val Met Glu Ala Val Asp Pro Glu Val Thr Val Thr Cys
     865             870             875             880

40
     Met Asp Leu Gly His Ile Arg Lys Thr Phe Gln Leu Ala Leu Leu Cys
                 885             890             895
```

Thr Lys Arg Asn Pro Leu Glu Arg Pro Thr Met Leu Glu Val Ser Arg
     900   905   910

5

Val Leu Leu Ser Leu Val Pro Ser Leu Gln Val Ala Lys Lys Leu Pro
     915   920   925

10 Ser Leu Asp His Ser Thr Lys Lys Leu Gln Gln Glu Asn Glu Val Arg
     930   935   940

Asn Pro Asp Ala Glu Ala Ser Gln Trp Phe Val Gln Phe Arg Glu Val
15 945   950   955   960

Ile Ser Lys Ser Ser Ile
          965

20

```
<210>   11
<211>   636
<212>   DNA
25  <213>   partial wheat ERECTA

<400>   11
atgaattctg caatacctag gcttgagggg taactcactg actggaacct tgtcacctga    60

30  catgtgccaa ctcactggcc tgtggtactt tgatgtgagg ggcaacaatc taacaggaac   120

aattccacag agcataggga actgcactag ctttgagatt ctggacattt catataacaa   180

aatctctgga gaaatacctt acaacatagg tttccttcaa gtagctacac tgtcacttca   240

35  aggaaataga ctgactggga aaattccaga agtgattggc ctcatgcaag ctcttgctgt   300

tcttgatctg agcgaaaacg aactagtagg ggccattcct ccgatactcg gcaacctgtc   360

40  ctacactggc aaactatatt tgcatggcaa taaacttact cgtcaagtac ccccggaact   420

tggcaacatg actaaactta gctacctgca actgaatgac aatgaattag tgggcgcaat   480
```

tccagctgag cttgggaaac ttgaagagct attcgaatta aatcttgcca acaacaatct   540

tgagggtcct attcctacaa acatcagttc ttgcactgca ctaaacaaat tcaatgttta   600

cggcaataga ttgaacggtt ctatccctgc tggttt   636

<210> 12
<211> 466
<212> DNA
<213> partial wheat ERECTA

<400> 12
ttcaatgttt atggcaatag attgaacggt tctatccctg ctggtttcca gaatttggag   60

agtttgacta acttgaattt atcctcaaac aatttaaag gccatatccc atctgaactt   120

ggtcatatca tcaatttgga cacactggat ctttcctaca atgaactctc tggaccagtt   180

cctgctacta ttggtgatct tgagcatctt cttcaactaa atttgagcaa aaaccatctt   240

agcgggtcag tgcctgctga gttcggaaac ttgagaagca tccaagtaat tgatttatcc   300

aacaacgcca tgtctggtta tctccctgaa gaactaggcc aacttcagaa ccttgatagt   360

ttgattctta acaacaatat tttggtcgga gagatccctg ctcagttggc taactgcttc   420

agcttaaaca tcttgaactt gtcacataac aacttttctg gacatg   466

<210> 13
<211> 372
<212> DNA
<213> partial wheat ERECTA

<220>
<221> misc_feature
<222> (62)..(62)
<223> not determined

<400> 13
ttgtcagcct tctggcttct cactctctcc caatggaaac ctgctcttct acgattacat   60

```
gngaaaacgg ttccttgtgg gatcttctcc atggtccatc aaagaaagtg aagcttgact      120

gggacacccg actgaggatc gcggtcggcg cggcacaagg gctggcctat ctgcaccatg      180

actgcaatct gcggatagtc cacagggacg tcaagtcctc caacatcctg ctcgacgagc      240

actttgaagc gcatctctcg gacttcggca tcgccaaatg cgtcccggca gccaagaccc      300

atgcgtccac atatgtgcta ggaaccatcg gctacatcga tccagagtac gcccggacgt      360

cgaggttgaa cg                                                          372
```

<210> 14
<211> 357
<212> DNA
<213> partial wheat ERECTA

<400> 14
```
ttgactaact tgaatttatc ctcaaacaat tttaaaggcc atatcccatc tgaacttggt       60

catatcatca atttggacac actggatctt tcctacaatg aactctctgg accagttcct      120

gctactattg gtgatcttga gcatcttctt caactaaatt tgagcaaaaa ccatcttagc      180

gcgtcagtgc ctgctgagtt cggaaacttg agaagcatcc aagtaattga tttatccaac      240

aacgccatgt ctggttatct ccctgaagaa ctaggccaac ttcagaacct tgatagtttg      300

attcttaaca acaatatttt ggtcggggag atccctgctc agttggctaa ctgcttc        357
```


<210> 15
<211> 314
<212> DNA
<213> partial wheat ERECTA

<400> 15
```
cacactggat ctttcctaca atgaattctc tggaccagac cctgctacta ttggtgatct       60

tgagcatgtt cttcagatta aatttgagca aaaaccatct tactggccca atgcctgctg      120
```

```
      agttctgaaa cttgagaagc atccaagtaa ttgatttatc caacaacgcc atgtctggtt      180

      atctccctga agaactacgc caacttcaga atcttgatag tttgatgctt aacaacaata      240

5     ctttggttgg ggagatccct gctcatctgg ctaactgctt caacttaaac atcttgaact      300

      tgccatataa caac                                                       314
```

```
10    <210>   16
      <211>   549
      <212>   DNA
      <213>   partial wheat ERECTA

15    <400>   16
      catcatcggc tacggcgctt caagtaccgt gtataaatgt ctgctcaaga gtggcaaggc      60

      cattgctgtg aagcggctct acagccaata caaccatggc gcccgtgagt ttgagacaga      120

20    gctggagaca gtcggtagca tccggcacag gaatcttgtc agccttcatg gcttctcact      180

      ctctccaaat ggaaacctgc tcttctacga ttacatggaa aatggttcct tgtgggatct      240

      tctccacggt ccatcaaaga aggtgaaact tgactgggac acccgactga gaatcgccgt      300
25
      cggtgcggca aagggctgg catatcttca ccatgactgc aaccctcgga tagtccacag      360

      ggacgtcaag tcctccaaca tcctgctcga cgagcacttt gaagcgcatc tctcggactt      420

30    cggcatcgcc aaatgcgtcc cagctgccaa gacccacgcg tccacctatg tgctaggaac      480

      catcggctac atcgatccag agtacgcccg gacgtcccag ctgaacgaga aatctgatgt      540

      gtacagctt                                                            549
35
```

```
      <210>   17
      <211>   615
      <212>   DNA
40    <213>   partial wheat ERECTA

      <400>   17
      ccacgcgtcg atcatcaatt gggacacacg ggatctttcc tacaatgaat tctccgggcc      60
```

```
agttcctgct actattggtg atctggagca tcttcttcaa ctaaatttga gcaaaaacca      120

tcttagtggg tctgtgcctg ctgagttcgg aaacttgaga agcatccaag taattgattt      180

atccaacaac gccatttctg gttatctccc tgaagaacta ggccaacttc agaaccttga      240

tagtttgatt cttaacaaca atactttggt tggggagatc cctgctcagt tggctaactg      300

cttcagctta aacatcttga acttgtcata taacaacttt tctggacatg tcccattcgc      360

taagaacttc tcaaagttcc ccggggaaag cttcttggga aatccgatgc tcagcgttca      420

ctgcaaagac tccagctgtg gcaactctca tggatcaaaa gtgaatactc ggacagcgat      480

tgcttgcatc atctcgggct tcgtcatatt gctctgtgtt ctgctattgg gcaatatata      540

aaacaaagcg accacagcca cctatcaaag catctgataa accagggcaa ggacctccaa      600

agatagtact cctcc                                                       615
```

```
<210>   18
<211>   719
<212>   DNA
<213>   partial wheat ERECTA

<400>   18
cgttcactgc aaagactcca gctgtggcaa ctctcatgga tcaaaagtga atattcggac       60

ggcgattgct tgcatcatct cgggcttcgt catactgcta tgtgttctgc tattggcaat      120

atataaaaca aagcgaccac agccacctat caaagcatct gataaaccag tgcaacgacc      180

tccaaagata gtactcctcc aaatggacat ggctatccat acctatgatg atattatgac      240

gctgacagag aatttgagcg agaaatacat catcggctac ggcgcttcaa gtaccgtgta      300

taaatgtgtg ctcaagagtg gcaaggccat tgctgtgaag cggctctaca gccaatacaa      360

ccatggcgcc cgtgagtttg agacagagct gcagacagtc cgtagcatcc ggcacaggaa      420

tcttgtcagc cttcatggct tctcactctc tccaaatgga aacctgctct tctacgatta      480
```

```
catggaaaat ggttccttgt gggatcttct ccacggtcca tcaaagaagg tgaaacttga    540

ctgggacacc cgactgagaa tcgccgtcgg tgcggcacaa gggctggcat atcttcacca    600

tgactgcaac cctcggatag tccacaggga cgtcaagtcc tccaacatcc tgctcgacga    660

gcactttgaa gcgcatctct cggacttcgg catcgcccaa tgcgtcccca gctgccaag     719
```

<210> 19
<211> 1346
<212> DNA
<213> wheat ERECTA

<400> 19
```
ttcaatgttt atggcaatag attgaacggt tctatccctg ctcgtttcca gaatttggag    60

agtttgacta acttgaattt atcctcaaac aattttaaag gccatatccc atctgaactt    120

cgtcatatca tcaatttgga cacactggat ctttcctaca atgaactctc tggaccagtt    180

cctgctacta ttggtgatct tgagcatctt cttcaactaa atttcagcaa aaaccatctt    240

agcgggtcag tgcctgctga gttcggaaac ttgagaagca tccaagtaat tgatttatcc    300

aacaacgcca tgtctggtta tctccctgaa caactagggcc aacttcagaa ccttgatagt    360

ttgattctta acaacaatat tttggtcggg gagatccctg ctcagttggc taactgcttc    420

agcttaaaca tcttgaactt gtcacataac aacttttctg gacatgtccc attcgctaag    480

aacttctcaa agttccccgg ggaaagcttc ttgggaaatc cgatgctgag cgttcactgc    540

aaagactcca gctgtggcaa ctctcatgga tcaaagtga atactcggac agcgattgct    600

tgcatcatct cgggcttcgt catactgcta tgtgttctgc tattcgcaat atataaaaca    660

aagcgaccac agccacctat caaagcatct gataaaccag ggcaaggacc tccaaggata    720

gtactcctcc aaatggacat ggctatccat acctatgatg atattatgag gctgacggag    780

aatttgaggcg agaaatacat catcggctac ggcgcttcaa gtaccgtgta taaatgtgtg    840
```

```
ctcaagagtg gcaaggccat tgctgtgaag cggctctaca gccaatacaa ccatggcgcc    900

cgtgagtttg agacagagct ggacacagtc ggtagcatcc ggcacaggaa tcttgtcagc    960

cttcatggct tctcactctc tccaaatgga aacctgctct tctacgatta catggaaaat   1020

ggttccttgt gggatcttct ccacggtcca tcaaagaagg tgaaacttga ctgggacacc   1060

cgactgagaa tcgccgtcgg tgcggcacaa gggctcgcat atcttcacca tgactgcaac   1140

cctcggatag tccacaggga cgtcaagtcc tccaacatcc tgctcgacga gcactttgaa   1200

gcgcatctct cggacttcgg catcgccaaa tgcgtcccag ctgccaagac ccacgcgtcc   1260

acatatgtgc taggaaccat cggctacatc gatccagagt acgcccggac gtcccagctg   1320

aacgagaaat ctgatgtgta cagctt                                        1346
```

<210> 20
<211> 448
<212> PRT
<213> wheat ERECTA

<400> 20

```
Phe Asn Val Tyr Gly Asn Arg Leu Asn Gly Ser Ile Pro Ala Gly Phe
1               5                   10                  15
```

```
Gln Asn Leu Glu Ser Leu Thr Asn Leu Asn Leu Ser Ser Asn Asn Phe
            20                  25                  30
```

```
Lys Gly His Ile Pro Ser Glu Leu Gly His Ile Ile Asn Leu Asp Thr
        35                  40                  45
```

```
Leu Asp Leu Ser Tyr Asn Glu Leu Ser Gly Pro Val Pro Ala Thr Ile
        50                  55                  60
```

Gly Asp Leu Glu His Leu Leu Gln Leu Asn Leu Ser Lys Asn His Leu
65   70   75   80

5   Ser Gly Ser Val Pro Ala Glu Phe Gly Asn Leu Arg Ser Ile Gln Val
                85   90   95

    Ile Asp Leu Ser Asn Asn Ala Met Ser Gly Tyr Leu Pro Glu Glu Leu
10   100   105   110

    Gly Gln Leu Gln Asn Leu Asp Ser Leu Ile Leu Asn Asn Asn Ile Leu
                115   120   125
15

    Val Gly Glu Ile Pro Ala Gln Leu Ala Asn Cys Phe Ser Leu Asn Ile
                130   135   140
20

    Leu Asn Leu Ser His Asn Asn Phe Ser Gly His Val Pro Phe Ala Lys
    145   150   155   160

25 Asn Phe Ser Lys Phe Pro Gly Glu Ser Phe Leu Gly Asn Pro Met Leu
                165   170   175

    Ser Val His Cys Lys Asp Ser Ser Cys Gly Asn Ser His Gly Ser Lys
                180   185   190
30

    Val Asn Thr Arg Thr Ala Ile Ala Cys Ile Ile Ser Gly Phe Val Ile
                195   200   205
35

    Leu Leu Cys Val Leu Leu Leu Ala Ile Tyr Lys Thr Lys Arg Pro Gln
                210   215   220
40

    Pro Pro Ile Lys Ala Ser Asp Lys Pro Gly Gln Gly Pro Pro Lys Ile
                225   230   235   240

Val Leu Leu Gln Met Asp Met Ala Ile His Thr Tyr Asp Asp Ile Met
              245   250   255

5
Arg Leu Thr Glu Asn Leu Ser Glu Lys Tyr Ile Ile Gly Tyr Gly Ala
              260   265   270

10 Ser Ser Thr Val Tyr Lys Cys Val Leu Lys Ser Gly Lys Ala Ile Ala
              275   280   285

Val Lys Arg Leu Tyr Ser Gln Tyr Asn His Gly Ala Arg Glu Phe Glu
15   290   295   300

Thr Glu Leu Glu Thr Val Gly Ser Ile Arg His Arg Asn Leu Val Ser
   305   310   315   320
20

Leu His Gly Phe Ser Leu Ser Pro Asn Gly Asn Leu Leu Phe Tyr Asp
              325   330   335

25
Tyr Met Glu Asn Gly Ser Leu Trp Asp Leu Leu His Gly Pro Ser Lys
              340   345   350

30 Lys Val Lys Leu Asp Trp Asp Thr Arg Leu Arg Ile Ala Val Gly Ala
              355   360   365

Ala Gln Gly Leu Ala Tyr Leu His His Asp Cys Asn Pro Arg Ile Val
15   370   375   380

His Arg Asp Val Lys Ser Ser Asn Ile Leu Leu Asp Glu His Phe Glu
   385   390   395   400
40

Ala His Leu Ser Asp Phe Gly Ile Ala Lys Cys Val Pro Ala Ala Lys
              405   410   415

```
Thr His Ala Ser Thr Tyr Val Leu Gly Thr Ile Gly Tyr Ile Asp Pro
            420                 425                 430
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```
Glu Tyr Ala Arg Thr Ser Gln Leu Asn Glu Lys Ser Asp Val Tyr Ser
            435             440                 445
```

```
<210>    21
<211>    1273
<212>    DNA
<213>    partial maize ERECTA

<400>    21
cctggactct gtggatattg gcttggttct tcatgtcgtt ccactggcca ccgagacaaa     60

ccgccaatct caaaggctgc cataattggt gttgctgtgg gtggacttgt tatcctcctg    120

atgatcttag tagctgtatg caggccacac catccacctg cttttaaaga tgccactgta    180

agcaagccag tgagcaatgg tccacccaag ctggtgatcc ttcatatgaa catggctctt    240

catgtctttg atgatataat gaggatgact gagaacttga gtgagaaata catcattgga    300

tacggggcat caagtacagt ttataaatgt gttctaaaga attgcaaacc agtggcaata    360

aaaaagctgt atgcccacta ccctgcagag ccttaaggaa tttgaaactg agctcgagac    420

tgttggtagc atcaaacacc ggaatctagt cagccttgcc aagggtactc gttgtcacct    480

gttgggaacc tcctctttta tgattatatg gagagtggca gcttatggga tgttttacat    540

gaaggctcat ccaagaagaa caaacttgac tgggtcactc gcctacggat cgctcttggt    600

gcagctcaag gcctcgctta ccttcaccat gactgcagcc cacgaataat tcaccgggac    660

gtaaatcaa agaatatact cctcgacaaa gattatgagg cccatcttac agacttccgc    720

atcgctaaga gcttatgtgt ctcgaagact cacacgtcaa cctacgtcat ggcactatt    780

ggttacattg atcccgagta cgcccgcacc tcccgcctca acgagaagtc tgatgtctac    840
```

```
agctacggca tcgttctgct gcagctgctg accggcaaga agccagtgga caacgagtgc      900

aatctccatc acttgatcct atcgaagacg gcgagcaacg aggtcatgga gacggtggac      960

cccgacgtgg gagacacctg caaggacctg ggcgaggtga agaagctgtt ccagctggcg     1020

ctcctctgca ccaagcggca gccctcggac cggccgacga tgcacgacgt ggtgcgcgtc     1080

cttgactgcc tggtgaaccc ggagccgccg ccgcagccgc agcagcagca gcagaagggc     1140

gcacgcgcac caccagctgc cgccgcagcc gtcgccgccg gcctacgtcg acgagtacgt     1200

cagcctgcgg ggcactggcg ccctctcctg cgccaactcg tccagcacct cggacgccga     1260

gctgttcctc aag                                                       1273
```

```
<210>    22
<211>    100
<212>    DNA
<213>    partial maize ERECTA

<400>    22
cacaaaatgt cagtcaaact actcccctg caatcggcct cactcaggc gcctcaccga        60

acgtctacgt cttcccctac accatgttct gcgagatggc                           100


<210>    23
<211>    599
<212>    DNA
<213>    partial maize ERECTA

<220>
<221>    misc_feature
<222>    (539)..(539)
<223>    not determined


<400>    23
ttttttttttt tttttttttt ttttgaggga gcaagctccg ctgctcttgc gttgcgtcac     60
```

```
      atgacttttt acagctaaca acaccctagc tactgagtcc catgttaatc tcctgcgctg    120

      cgtcccacaa aatgtcagtc aaactactcc ctgcaatcgg cctcactcaa ggcgcctcac    180

  5   cgaacgtcta cgtcttcccc tacaccatgt tctgcgagat ggcctcgccg aacttgagga    240

      acagctcggc gtccgaggtg ctggacgagt tggcgcagga gagggcgccg gtgccccgca    300

      ggctgacgta ctcgtcgacg taggccggcg gcgacggctg cggcggcagc tggtggtgcg    360
 10
      cgtgcgcctt ctgctgctgc tgctgcggct gcggcggcgg ctccgggttc accaggcagt    420

      caaggacgcg caccacctcg tgcatcgtcg gccggtccga gggctgccgc ttggtgcaga    480

 15   ggagcgccag ctggaacagc ttcttcacct cgcccaggtc cttgcaggng tctcccacgt    540

      cggggtccac cgtctccatg acctcgttgc tcgccgtctt cgataggatc aaggatgga     599
```

```
      tttttttttt ttttttttga agaagctccg ctgctctcgc gttgcgtcac atgacttttt     60

      acagataaca ccaccctagc tactgagtcc catgttaatc tcctgcgctg cgttccacaa    120

 30   aatgtcagcc aaactactcc ctgcaatcgg cctcactcaa ggcgcctcac cgaacgtcta    180

      cgtcttcccc tacaccatgt tctgcgagat ggcctcgccg aacttgagga acagctcggc    240

      gtccgaggtg ctggacgagt tggcgcagga gagggcgccg gtgccccgca ggctgacgta    300
 35
      ctcgtcgacg taggccggcg gggacggctg cggcggcagc tggtggtgcg cgtgcgcctt    360

      ctgctgctgc tgctgcggct gcggcggggg ctccgggttc accaggcagt caaggacgcg    420

 40   caccacctcg ggcatc                                                     436
```

<211> 509
<212> DNA
<213> partial maize ERECTA

5 <400> 25

```
ccaaagaaaa atggagaggg gggataaaga agatgaggaa gaagctccgc tgctcttgcg     60

ttgcgtcaca tgactttta cagctaacaa caccctagct actgagtccc atgttaatct     120

cctgcgctgc gtcccacaaa atgtcagtca aactactccc tgcaatcggc ctcactcaag     180

gcgcctcacc gaacgtctac gtcttcccct acaccatgtt ctgcgagatg gcctcgccga     240

acttgaggaa cagctcggcg tccgaggtgc tggacgagtt ggcgcaggag agggcgccgg     300

tgccccgcag gctgacgtac tcgtcgacgt aggccggcgg cgacggctgc ggcggcagct     360

ggtggtgcgc gtgcgccttc tgctgctgct gctgcggctg cggcggcggc tccgggttca     420

ccaggcagtc aaggacgcgc accacctcgt gcatcgtcgg ccggtccgag ggctgccgct     480

tggtgcagag gagcgccagc tggaacagc                                        509
```

25 <210> 26
<211> 318
<212> DNA
<213> partial maize ERECTA

30 <400> 26

```
gatggatcaa tacagcctcc tagtaagtta gaccaccaaa gaaaaatggg gaggggggat     60

aaagaagagg aagaagctcc gctgctcttg cgtcacatga ctttttttac agctaacaac     120

accctagcta ctgagtccca tgttaatctc ctgcgctgcg tccacaaaa tgtcagtcaa     180

actactcccc ctgcaatcgg cctcactcaa ggcgcctcac cgaacgtcta cgtcttcccc     240

tacaccatgt tctgcgagat ggcctcgccg aacttgagga acagctcggc gtccgaggtg     300

ctggacgagt tggcgcag                                                    318
```

<210> 27
<211> 103
<212> DNA
<213> partial maize ERECTA

5

<400> 27

agcaagccag tgagcaatgg tccacccaag ctggtgatcc ttcatatgaa catggctctt   60

catgtctttg atgatataat gaggatgact gagaacttca gtg   103

10

<210> 28
<211> 458
<212> DNA
15 <213> partial maize ERECTA

<400> 28

ataattcacc gggacgtaaa atcaaagaat atactcctcc acaaagatta tgaggcgcat   60

20 cttacagact tcggcatcgc taagagctta tgtgtctcga agactcacac gtcaacctac   120

gtcatgggca ctattggtac acttgatcct gagtacgccc gcacctcccg cctcaacgag   180

aagtctgatg tctacagcta cggcatcgtt ctgctggagc tgctgaccgg caagaagcca   240

25

gtggacaacg agtgcaatct ccatcacttg atcctatcga agacggcgag ccaacgaggt   300

catggagacg gtggaccccg acgtgggaga cacctgcaag gacctggccg aggtgaagaa   360

30 gctgttccag ctggcgctcc tctgcaccaa gcggcagccc tcggaccggc cgacgatgca   420

ccaggtggtg cgcgtccttg actgcctggt gaacccggg   458

35 <210> 29
<211> 593
<212> DNA
<213> partial maize ERECTA

40 <400> 29

ttttttttt tttttttttt tttttgagg aagaagctcc gctgctcttg cgttgcgtca   60

catgactttt tacagctaac aacaccctag ctactgagtc ccatgttaat ctcctgcgct   120

```
gcgtcccaca aaatgtcagt caaactactc cctgcaatcg gcctcatttt tttgttgtcc    180

tcaccgaacg tctacgtctt cccctacacc atgttctgcg agatggcctc gccgaacttg    240

aggaacagct cggcgtccga ggtgctggac gagttggcgc aggaaagggc gccggtgccc    300

cgcaggctga cgtactcgtc gacgtaggcc ggcggcgacg gctgcggcgg cagctggtgg    360

tgcgcgtgcg ccttctgctg ctgctgctgc ggctgcggcg gcggctccgg gttcaccagg    420

cagtcaagga cgcgcaccac ctcgtgcatc gtcggccggt ccgagggctg ccgcttggtg    480

cagaggagcg ccagctggaa cagcttcttc acctcgccca ggtccttgca ggtgtctccc    540

acgtcggggt ccaccggctc catgacctcg ttgctcgccg tcttcgatag gat    593
```

```
<210>    30
<211>    206
<212>    DNA
<213>    partial maize ERECTA

<400>    30
tcacaaaaga tcatcaagca gaggaacggg agagatgatg atggatcaat acagcctcct    60

agtaagttag accacaaaga aaaatgggga ggggggataa agaagaggaa gaagctccgc    120

tgctcttgcg tcacatgact ttttttacag ctaacaacac cctagctact gagtcccatg    180

ttaatctcct gcgctgcgtc ccacaa    206
```

```
<210>    31
<211>    534
<212>    DNA
<213>    partial maize ERECTA

<400>    31
caagcagagg aacgggagag atgatcatgg atcaatacac cctcctagta agttagacca    60

caaagaaaaa tggggagggg cggataaaga agaggaagaag ctccgctgct cttgcgtcac    120
```

```
atgacttttt ttacagctaa caacaccta gctactgagt cccatgttaa tctcctgcgc      180

tgcgtcccac aaaatgtcag tcaaactact cccctgcaa tcggcctcac tcaaggcgcc      240

tcaccgaacg tctacgtctt cccctacacc atgttctgcg agatggcctc gccgaacttg      300

aggaacagct cggcgtccga ggtgctggac gagttggcgc aggagaggc gccggtgccc      360

cgcaggctga cgtactcgtc gacgtaggcc ggcggcgacg gctgcggcgg cagctggtgg      420

tgcgcgtgcg gcttctgctg ctgctgctgc ggctgcggcg gcggctccgg gttcaccagg      480

cagtcaagga cgcgcaccac ctcgtgcatc gtcggccggt ccgagggctg ccgc           534
```

```
<210>   32
<211>   527
<212>   DNA
<213>   partial maize ERECTA

<400>   32
gaaagtcaca agatcataag gaagaggaac gggagagatg atgatggatc aatacagcct       60

cctagtaagt tagaccacca agaaaaatg gagaggggg ataaagaaga tgaggaagaa        120

gctccgctgc tcttgcgttg cgtcacatga ctttttacag ctaacaacac cctagctact       180

gagtcccatg ttaatctcct gcgctgcgtc ccacaaaatg tcagtcaaac tactccctgc       240

aatcggcctc actcaaggcg cctcaccgaa cgtctacgtc ttcccctaca ccatgttctg       300

cgagatggcc tcgccgaact tgaggaacag ctcggcgtcc gaggtgctgg acgagttggc       360

gcaggaaagg cgccggctgc cccgcaggct gacgtactcg tcgacgtagg ccggcggcga       420

cggctgcggc ggcagctggt ggtgcgcgtg cgccttctgc tgctgctgct gcggctgcgg       480

cggcggctcc gggttcacca ggcagtcaag gacgcgcacc acctcgt                   527
```

```
<210>   33
<211>   412
<212>   DNA
```

```
<213>    partial maize ERECTA

<400>    33
cttgcgttgc gtcacatgac tttttacagc taacaacacc ctagctactg agtcccatgt    60

taatctcctg cgctgcgtcc cacaaaatgt cagtcaaact actccctgca atcggcctca   120

ctcaggggggc ctcaccgaac gtctacgtct tccctacac caggttctgc gagatggcct   180

cgccgaactt gaggaacagc tcggcgtccg aggggctgga cgagttggcg caggaaaggg   240

cgccggggcc ccgcaggctg acgtactcgt cgacgtaggc cggcgccgac ggctgcggcg   300

gcagctgggg gtgcgcgtgc gccttctgct gctgctgctg cggttgcggc ggcggctccg   360

ggttcaccag gcagtcaagg acgcgcacca cctcgggcat cgtcggccgg tc           412
```

```
<210>    34
<211>    533
<212>    DNA
<213>    partial maize ERECTA

<400>    34
tcgagttttt ttttttttt ttttgatgat ggatcaatac agcctcctag taagttagac    60

caccaaagaa aaatggagag gggggataaa gaagatgagg aagaagctcc gctgctcttg   120

cgttgcgtca catgactttt tacagctaac aacaccctag ctactgagtc ccatgttaat   180

ctcctgcgct gcgtcccaca aaatgtcagt caaactactc cctgcaatcg gcctcactca   240

aggcgcctca ccgaacgtct acgtcttccc ctacaccatg ttctgcgaga tggcctcgcc   300

gaacttgagg aacagctcgg cgtccgaggt gctggacgag ttggcgcagg agagggcgcc   360

ggtgccccgc aggctgacgt actcgtcgac gtaggccggc ggcgacggct gcggcggcag   420

ctggtggtgc gcgtgcgcct tctgctgctg ctgctgccgc tgccgccgcc gctccgggtt   480

caccaggcag tcaaggacgc gcaccacctc gtcatcgtc ggccggtccg agg           533
```

```
<210>    35
<211>    191
<212>    DNA
<213>    partial maize ERECTA

<400>    35
agcctcctag taagttagac caccaaagaa aaatggagag gggggataaa gaagatgagg      60

aagaagctcc gctgctcttg cgttgcgtca catgactttt tacagctaaa caacaccta      120

gctactgagt cccatggtaa tctcctgcgc tgcgtcccac aaaatgtcag tcaaactact      180

ccctgcaatc g                                                         191


<210>    36
<211>    683
<212>    DNA
<213>    partial maize ERECTA

<400>    36
gacgttggga acctcctctt ttatgcttta tggagagtgg cagcttatgg gatgttttac      60

atgaaggctc atccaagaag aacaaacttg actggctgac tcgcctacgg atcgctcttg     120

gtgcagctca aggcctcgct taccttcacc atgactgcag cccacgaata attcaccggg     180

acgtaaaatc aaagaatata ctcctcgaca aagattatga ggcgcatctt acagacttcg     240

gcatcgctaa gagcttatgt gtctcgaaga ctcacacgtc aacctacgtc atggcacta     300

ttggttacat tgatcctgag tacgcccgca cctcccgcct caacgagaag tctgatgtct     360

acagctacgg catcgttctg ctggagctgc tcaccggcaa gaagccagtc gacaacgagt     420

gcaatctcca tcacttgatc ctatcgaaga cggccagcaa cgaggtcatg gagacggtgg     480

accccgacgt gggagacacc tgcaaggacc tggccgacgt gaagaagctc ttccagctgg     540

cgctcctctg caccaagcgg cagccctcgg accggccgac gatgcacgag gtggtgcgcg     600

tccttgactg cctggtgaac ccggagccgc cgccgcagcc gcagcagcag cagcagaagg     660
```

```
cgcacgcgca ccaccagctg ccg                                        683
```

```
     <210>   37
 5   <211>   610
     <212>   DNA
     <213>   partial maize ERECTA

     <400>   37
10   cttcggcatc gctaagagct tatgtgtctc gaagactcac acgtcaacct acgtcatggg   60

     cactattggt tacattgatc ctgagtacgc ccgcacctcc cgcctcaacg agaagtctga   120

     tgtctacagc tacggcatcg ttctgctgga gctgctgacc ggcaagaagc cagtggacaa   180
15
     cgagtgcaat ctccatcact tgatcctatc gaagacggcg agcaacgagg tcatggagac   240

     ggtggacccc gacgtgggag acacctgcaa ggacctgggc gaggtgaaga agctgttcca   300

20   gctggcgctc ctctgcacca agcggcagcc ctcggaccgg ccgacgatgc acgaggtggt   360

     gcgcgtcctt gactgcctgg tgaacccgga gccgccgccg cagccgcagc agcagcagca   420

     gaaggcgcac gcgcaccacc agctgccgcc gcagccgtcg ccgccggcct acgtcgacga   480
25
     gtacgtcagc ctgcggggca ccggcgccct ctcctgcgcc aactcgtcca gcacctcgga   540

     cgccgagctg ttcctcaagt tcggcgaggc catctcgcag aacatggtgt aggggaagac   600

30   gtagacgttc                                                           610
```

```
     <210>   38
     <211>   208
35   <212>   DNA
     <213>   partial maize ERECTA

     <220>
     <221>   misc_feature
40   <222>   (138)..(138)
     <223>   not determined
```

<400> 38

gcaagccagt gagcaatggt ccacccaagc tgggatcctt catatgaaca tggctcttca   60

tgtctttgat gatataatga ggatgactga gaacttgagt gagaaataca tcattggata   120

cggggcatca agtactgntt ataaatgtgt tctaaagaat tgcaaaccag tggcaataaa   180

aaagctgtat gcccactacc ctcagagc   208

<210> 39
<211> 634
<212> DNA
<213> partial maize ERECTA

<400> 39

gaccgggacg taaaatcaaa gaatatactc ctcgacaaag attatgaggc gcatcttaca   60

gacttcggca tcgctaagag cttatgtgtc tcgaagactc acacgtcaac ctacgtcatg   120

ggcactattg gttacattga tcctgagtac gcccgcacct cccgcctcaa cgagaagtct   180

gatgtctaca gctacggcat cgttctgctg gagctgctga ccggcaagaa gccagtggac   240

aacgagtgca atctccatca cttgatccta tcgaagacgg cgagcaacga cgtcatggag   300

acggtggacc ccgacctggg agacacctgc aaggacctgc gcgaggtgaa caagctgttc   360

cagctggcgc tcctctgcac caagcggcag ccctcggacc ggccgacgat gcacgaggtg   420

gtgcgcgtcc ttgactgcct ggtgaacccg gagccgccgc cgcagccgca gcagcagcag   480

cagaaggcgc acgcgcacca ccagctgccg ccgcagccgt cgccgccggc ctacgtcgac   540

gagtacgtca gcctgcgggg caccggcgcc ctctcctgcg ccaactcgtc cagcacctcg   600

gacgccgagc tgttcctcaa gttcggcgag gcca   634

<210> 40
<211> 558
<212> DNA
<213> partial maize ERECTA

<400> 40

acttgatgcc ccgtatccaa tgatgtattt ctcactcaag ttctcagtca tcctcattat   60

atcatcaaag acatgaagag ccatgttcat atgaaggatc accagcttgg gtggaccatt   120

gctcactggc ttgcttacag tggcatcttt aaaagcaggt ggatggtgtg gcctgcatac   180

agctactaag atcatcagga ggataacaag tccacccaca gcaacaccaa ttatggcagc   240

ctttgagatt ggcggtttgt ctcggtggcc agtggaacga catgaagaac caagccaata   300

tccacagagt ccaggattac ctaaaaagct gtcatgtgaa aaccgtgtga agttgttgtc   360

agtagggaca gcaccagcca aattattgta tgacacattt aagatattga ggctgaagca   420

gttcatcaga gaagagacat cgccagttat attgttgttt ccagtttta gcaacatcag   480

gttttgcagc attccaagtt cttgaggaat cagaccacca agatgattat aggataaatc   540

aatctccatg acacttct   558

<210> 41
<211> 429
<212> DNA
<213> partial maize ERECTA

<400> 41

tacttgatgc cccgtatcca atgatgtatt tctcactcaa gttctcagtc atcctcatta   60

tatcatcaaa gacatgaaga gccatgttca tatgaaggat caccagcttg ggtggaccat   120

tgctcactgg cttgcttaca gtggcatctt aaaagcagg tggatggtgt ggcctgcata   180

cagctactaa gatcatcagg aggataacaa gtccacccac agcaacacca attatggcag   240

cctttgagat tggcggtttg tctcggtggc cagtggaacg acatgaagaa ccaagccaat   300

atccacagag tccaggatta cctaaaaagc tgtcatgtga aaaccgtgtg aagttgttgt   360

cagtagggac agcaccagcc aaattattgt atgacacatt taagatattg aggctgaagc   420

agttcatca   429

<210> 42
<211> 556
<212> DNA
<213> partial maize ERECTA

<400> 42
acatgcaagt caacaggtta actggatcga taccaccaga gctaggaaat atgtcaacac   60

ttcattacct agaactgaat gataatcaac ttactgggtc aattccacca gagcttggaa   120

ggctaacagg cttgtttgac ctgaaccttg cgaataacca ccttgaagga ccaattcctg   180

acaacctaag ttcatgtgtg aatctcaata gcttcaatgc ttatggcaac aagttaaatg   240

gaaccattcc tcgttcgctg cggaaacttg aaagcatgac ctatttaaat ctttcatcaa   300

atttcataag tggctctatt cctattgagc tatcaaggat caacaatttg gacacgttgg   360

acttatcctg taacatgatg acgggtccaa ttccatcatc cattggcaac ctagagcatc   420

tattgaggct taacttgagc aagaatgatc tagttggatt catccctgcg gagtttggta   480

atttgagaag tgtcatggag attgatttat cctataatca tcttggtggt ctgattcctc   540

aagaacttgg aatgct   556

<210> 43
<211> 683
<212> DNA
<213> partial maize ERECTA

<400> 43
gacgttggga acctcctctt ttatgcttta tgcagagtgg cagcttatgg gatgttttac   60

atgaaggctc atccaagaag aacaaacttg actgggtgac tcgcctacgg atcgctcttg   120

gtgcagctca aggcctcgct taccttcacc atgactgcag cccacgaata attcaccggg   180

acgtaaaatc aaagaatata ctcctcgaca aagttatga ggcgcatctt acagacttcg   240

```
gcatcgctaa gagcttatgt gtctcgaaga ctcacacgtc aacctacgtc atgggcacta      300

ttggttacat tgatcctgag tacgcccgca cctcccgcct caacgagaag tctgatgtct      360

acagctacgg catcgttctg ctggagctgc tgaccggcaa gaagccagtg gacaacgagt      420

gcaatctcca tcacttgatc ctatcgaaga cggcgagcaa cgaggtcatg gagacggtgg      480

accccgacgt gggagacacc tgcaaggacc tgggcgaggt gaagaagctg ttccagctgg      540

cgctcctctg caccaagcgg cagccctcgg accggccgac gatgcacgag gtggtgcgcg      600

tccttgactg cctggtgaac ccggagccgc cgccgcagcc gcagcagcag cagcagaagg      660

cgcacgcgca ccaccagctg ccg                                            683
```

```
<210>  44
<211>  2315
<212>  DNA
<213>  maize ERECTA

<400>  44
acatgcaagt caacaggtta actggatcga taccaccaga gctaggaaat atgtcaacac       60

ttcattacct agaactgaat gataatcaac ttactgggtc aattccacca cagcttggaa      120

ggctaacagg cttgtttgac ctgaaccttg cgaataacca ccttgaagga ccaattcctg      180

acaacctaag ttcatgtgtg aatctcaata gcttcaatgc ttatggcaac aagttaaatg      240

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```
25  Met Gln Val Asn Arg Leu Thr Gly Ser Ile Pro Pro Glu Leu Gly Asn
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    Met Ser Thr Leu His Tyr Leu Glu Leu Asn Asp Asn Gln Leu Thr Gly
30              20                  25                  30


    Ser Ile Pro Pro Glu Leu Gly Arg Leu Thr Gly Leu Phe Asp Leu Asn
                35                  40                  45
35

    Leu Ala Asn Asn His Leu Glu Gly Pro Ile Pro Asp Asn Leu Ser Ser
                50                  55                  60

40
    Cys Val Asn Leu Asn Ser Phe Asn Ala Tyr Gly Asn Lys Leu Asn Gly
    65                  70                  75                  80
```

```
     Thr Ile  Pro Arg Ser Leu Arg Lys Leu Glu Ser Met Thr Tyr Leu Asn
                     85                  90                  95


5
     Leu Ser  Ser Asn Phe Ile Ser Gly Ser Ile Pro Ile Glu Leu Ser Arg
                     100                 105                 110



10   Ile Asn  Asn Leu Asp Thr Leu Asp Leu Ser Cys Asn Met Met Thr Gly
                     115                 120                 125



     Pro Ile  Pro Ser Ser Ile Gly Asn Leu Glu His Leu Leu Arg Leu Asn
15       130                 135                 140



     Leu Ser  Lys Asn Asp Leu Val Gly Phe Ile Pro Ala Glu Phe Gly Asn
     145                 150                 155                 160
20


     Leu Arg  Ser Val Met Glu Ile Asp Leu Ser Tyr Asn His Leu Gly Gly
                     165                 170                 175



25
     Leu Ile  Pro Gln Glu Leu Gly Met Leu Gln Asn Leu Met Leu Leu Lys
                     180                 185                 190



30   Leu Glu  Asn Asn Asn Ile Thr Gly Asp Val Ser Ser Leu Met Asn Cys
                     195                 200                 205



     Phe Ser  Leu Asn Ile Leu Asn Val Ser Tyr Asn Asn Leu Ala Gly Ala
35       210                 215                 220



     Val Pro  Thr Asp Asn Asn Phe Thr Arg Phe Ser His Asp Ser Phe Leu
     225                 230                 235                 240
40


     Gly Asn  Pro Gly Leu Cys Gly Tyr Trp Leu Gly Ser Ser Cys Arg Ser
                     245                 250                 255
```

```
    Thr Gly His Arg Asp Lys Pro Pro Ile Ser Lys Ala Ala Ile Ile Gly
              260             265             270
5

    Val Ala Val Gly Gly Leu Val Ile Leu Leu Met Ile Leu Val Ala Val
              275             280             285
10

    Cys Arg Pro His His Pro Pro Ala Phe Lys Asp Ala Thr Val Ser Lys
          290             295             300
15  Pro Val Ser Asn Gly Pro Pro Lys Leu Val Ile Leu His Met Asn Met
        305             310             315             320

    Ala Leu His Val Phe Asp Asp Ile Met Arg Met Thr Glu Asn Leu Ser
20                  325             330             335

    Glu Lys Tyr Ile Ile Gly Tyr Gly Ala Ser Ser Thr Val Tyr Lys Cys
              340             345             350
25

    Val Leu Lys Asn Cys Lys Pro Val Ala Ile Lys Lys Leu Tyr Ala His
              355             360             365
30
    Tyr Leu Gln Ser Leu Lys Glu Phe Glu Thr Glu Leu Glu Thr Val Gly
              370             375             380

35  Ser Ile Lys His Arg Asn Leu Val Ser Leu Gln Gly Tyr Ser Leu Ser
        385             390             395             400

    Pro Val Gly Asn Leu Leu Phe Tyr Ala Tyr Met Glu Ser Gly Ser Leu
40                  405             410             415

    Trp Asp Val Leu His Glu Gly Ser Ser Lys Lys Asn Lys Leu Asp Trp
```

420   425   430

5   Val Thr Arg Leu Arg Ile Ala Leu Gly Ala Ala Gln Gly Leu Ala Tyr
              435   440   445

10 Leu His His Asp Cys Ser Pro Arg Ile Ile His Arg Asp Val Lys Ser
              450   455   460

    Lys Asn Ile Leu Leu Asp Lys Asp Tyr Glu Ala His Leu Thr Asp Phe
    465   470   475   480

15 Gly Ile Ala Lys Ser Leu Cys Val Ser Lys Thr His Thr Ser Thr Tyr
                   485   490   495

20 Val Met Gly Thr Ile Gly Tyr Ile Asp Pro Glu Tyr Ala Arg Thr Ser
                   500   505   510

    Arg Leu Asn Glu Lys Ser Asp Val Tyr Ser Tyr Gly Ile Val Leu Leu
25   515   520   525

    Glu Leu Leu Thr Gly Lys Lys Pro Val Asp Asn Glu Cys Asn Leu His
         530   535   540

30 His Leu Ile Leu Ser Lys Thr Ala Ser Asn Glu Val Met Glu Thr Val
    545   550   555   560

35 Asp Pro Asp Val Gly Asp Thr Cys Lys Asp Leu Gly Glu Val Lys Lys
                   565   570   575

40 Leu Phe Gln Leu Ala Leu Leu Cys Thr Lys Arg Gln Pro Ser Asp Arg
                   580   585   590

Pro Thr Met His Glu Val Val Arg Val Leu Asp Cys Leu Val Asn Pro
         595   600   605

5 Glu Pro Pro Pro Gln Pro Gln Gln Gln Gln Lys Ala His Ala His
      610   615   620

   His Gln Leu Pro Pro Gln Pro Ser Pro Pro Ala Tyr Val Asp Glu Tyr
10 625   630   635   640

   Val Ser Leu Arg Gly Thr Gly Ala Leu Ser Cys Ala Asn Ser Ser Ser
                645   650   655

15

   Thr Ser Asp Ala Glu Leu Phe Leu Lys Phe Gly Glu Ala Ile Ser Gln
                660   665   670

20
   Asn Met Val
            675